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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/009,466 | 06/05/2002 | Danilo Klvana | GGD-105 | 5896 |

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| EXAMINER |
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DUONG, THANH P

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| ART UNIT | PAPER NUMBER |
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1764

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/009,466 | Applicant(s) KLVANA ET AL. | |
| | Examiner Tom P Duong | Art Unit 1764 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 1-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>5/17/02</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

Claims 1-16 are objected to because of the following informalities:

In claim 1, line 14, it appears "said first section" should be replaced with --a third section--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6-7, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odell (2,700,598) in view of Andrew (4,810,472). Regarding claims 1, 7, and 12, Odell discloses a fixed bed reactor (Fig. 1) for gas involving catalytic reaction, said reactor (10) comprising: a longitudinal outer chamber having a proximate longitudinal end and a distal longitudinal end; said outer chamber including a reactor inlet near (3,5,11) said proximate longitudinal end; and a longitudinal inner chamber (20) mounted in said outer chamber and having a proximate end and a distal end; said inner chamber including a reactor outlet (6) at said proximate longitudinal end; said inner chamber including a) a first section (C) located near said proximate longitudinal end and being thermally coupled to said outer chamber, b) a second section (bottom

section near feed 7 and 13) located near said distal longitudinal end and being in fluid communication with both said outer chamber and said first section (best understood to be the third section), and c) a third section (B) located between said first and second sections; whereby, in operation, when gas enters said outer chamber through said inlet (3,5), said gas is heated to the ignition temperature of the gas by the heat coming from said first section of said inner chamber (20), and is forced to flow in said outer chamber in a first direction from said proximate end to said distal end; said gas then flows in said inner chamber from said distal end to said proximate end thereof, exiting through said outlet (6). Odell fails to disclose a third section (best understood to be section 38) being thermally insulated from said outer chamber. Andrew teaches the inner reaction tube 80 is provided with an insulation layer 82 (Fig. 3) to limit the heat loss to the space 90 or outer chamber. Thus, it would have been obvious in view of Andrew to one having ordinary skill in the art to modify the inner tube of Odell with an insulation layer as taught by Andrew in order to limit the heat loss the outer chamber. Regarding claim 2, Odell discloses the gas mixture (hydrocarbon, air and steam) is preheated as high as 800°F prior to feeding to the reactor (10) (Col. 2, lines 65-73). Note, it is conventional to provide auxiliary heating means such as a preheater to preheat the entering gas and it would have been obvious to do so here to bring the feed gas to reaction temperature. Regarding claims 3 and 4, Odell shows on Fig. 1 the outer chamber and inner chamber are cylindrical and concentric. Regarding claim 6, Odell shows the second section (conical cone) of said inner chamber includes an aperture for fluid communication with said outer chamber. Regarding claims 13-16, Odell discloses the oxidation of the hydrocarbon but does not disclose the reactor is use in other processes such as

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cleaning gas stream from combustible gases, production of trioxide, or production of biogas. However, it would have been prima facie obviousness to utilize the reactor of Odell to perform different processes since it has been held by the court that an apparatus must be distinguished from the prior art in terms of structure rather than function. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429. (See USPN 5,120,695 for using catalyst for purifying or reacting in different process of the claimed invention).

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Odell '598 in view of Andrew '472) as applied to claim 1 above, and further in view of Fegraus et al. (3,884,297). The applied references fail to show a first section of inner chamber is thermally coupled to outer chamber via fins. Fegraus et al. teaches the fins are disposed on within the casing 28 (outer chamber) with coolant tubes 54 run through the fins (Col. 4, lines 31) to increase the heat transfer between the hot gas outside the tube and coolant fluid inside the tube. Thus, it would have been obvious in view of Fegraus to one having ordinary skill in the art to modify the reactor of the applied references with fins as taught by Fegraus in order to increase heat transfer between the outer chamber and the inner tube.

3. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Odell '598 in view of Andrew '472) as applied to claim 1 above, and further in view of Foster (3,674,666). The applied references disclose the outer chamber (10) and inner chamber (20) are filled with catalytic particles and pellets (Col.


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2, lines 49-61 and Col. 3, lines 24-40) but fail to disclose sand. Foster teaches glass sand 24 is packed on either side of the catalyst bed 22 to aid in supporting the catalyst bed (Col. 2, lines 25-32). Thus, it would have been obvious in view of Foster to one having ordinary skill in the art to modify the reactor of the applied references with sand packed as taught by Foster in order to facilitate in supporting the catalyst bed or catalytic particles and/or pellets.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Duong
March 17, 2005
TD



Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700